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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/714,276

11/14/2003

John M. Morgenstern

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06/30/2006

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EXAMINER

DINH, TIEN QUANG

ART UNIT

PAPER NUMBER

3644

DATE MAILED: 06/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/714,276

Applicant(s)

MORGENSTERN ET AL.

Examiner

Tien Dinh

Art Unit

3644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 4/12/06.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 and 29-39 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12 and 29-39 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-12, 29-39 are rejected under 35 U.S.C. 103(a) as obvious over Darden in view of Makino or Howe.

Darden teaches design steps taken to configure the aircraft for low sonic boom supersonic flight conditions by an equivalent area distribution curve of the aircraft to approximate an ideal equivalent area distribution goal. The ideal equivalent area distribution goal curve is what one skilled in the art would want so that would motivate one skilled in the art to achieve that. Although Darden doesn't seem to specifically mention about "relaxing a design constraint", one skilled in the art would have "relaxed the design constraint" as desired to design an optimally performing aircraft. Please note that Darden teaches segmenting the wing into panels to analyze them and thus smoothing the configuration of each panel, determining the design variables along the Mach angle lines, determine an angle incident angle and shape of the remain portions for maximum lift-to-drag ratio. Darden also discloses using F-function to determine the minimized sonic boom disturbance and scaling the equivalent area distribution goal curve to maintain the desired aircraft weight. Darden also inherently teaches redistributing the areas of lift subject to center of pressure constraints to achieve the desired balance characteristics. Furthermore, Darden teaches that redistributing the lift of the wing by having the far-field expansion ahead of

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the areas of far-field compression and scaling an equivalent area distribution goal curve to maintain the desired aircraft weight that counter excursions below the equivalent area distribution goal curve.

Darden seems to be silent on the design steps as it relates to the sonic boom on the wings. However, Makino or Howe discloses that the design of the fuselage of the aircraft and the wings as an integrated system to reduce sonic booms are well known in the art.

It would have been obvious to one skilled in the art at the time the invention was made to have expanded the steps of Darden to analyze and design the whole aircraft (not just the nose) as taught by Makino or Howe to allow the design of the whole aircraft.

Re claims 5 and 33, to re-determine the incidence angle and remaining portion is an inherent step that one skilled in the art would have taken to design an optimal operating aircraft.

Re claims 6, 7, and 35 to optimize the configuration is a step that one skilled in the art would have taken to improve the design of the aircraft.

Re claims 10 and 38 to analyze the sonic boom below and to the side of the aircraft and to perturb the aircraft design variables are steps that one skilled in the art would have used in designing the whole aircraft.

Re claim 11, adjusting and reshaping are steps that one skilled in the art would have taken to improve the design of the aircraft.

Re claim 39, please note that allow a use to define a design variable is an inherent step one skilled in the art would have taken to optimize the design of the aircraft.

***Response to Arguments***

The Examiner respectfully disagrees with the applicant's arguments that Darden in view of Makino or Howe. Claim 1 calls for scaling an equivalent area distribution curve...to approximate an ideal equivalent area distribution goal curve and to relax the design constraint so that it is at or below the equivalent distribution goal curve. The Examiner maintains that every engineer desires the operation of the aircraft to be optimal or at "an ideal equivalent area distribution goal curve." By simply relaxing a design constraint, this is merely a step that one skilled in the art would have taken so that the aircraft can reach or come very close to the distribution goal curve. This is nothing more than an optimization step. The Examiner believes that Darden teaches the steps to reach or come close to the equivalent area distribution goal curve. Darden seems to be silent on using the design step on the aircraft's wing, fuselage, etc. That is why Makino or Howe was cited to teach that the use of design steps on designing the fuselage of the aircraft and the wings as an integrated system to reduce sonic booms are well known in the art. Hence, it would have been obvious to one skilled in the art at the time the invention was made to have expanded the steps of Darden to analyze and design the whole aircraft (not just the nose) as taught by Makino or Howe to allow the design of the whole aircraft. Darden in view of Makino or Howe teaches what has been claimed.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO**

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tien Dinh whose telephone number is 571-272-6899. The examiner can normally be reached on 9-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Teri Luu can be reached on 571-272-7045. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TD

A handwritten signature in black ink, appearing to read "Tien Dinh", is written over the typed name "TD".